West Coast Governors' Global Warming Initiative

Inventories/Protocols/Scientific Research

Working Group 5 Report
April 13, 2004

Commitment Statement

The three states are committed to developing consistent and coordinated greenhouse gas emission inventories, protocols for standard reporting, and accounting methods for greenhouse gas (GHG) emissions; to collaborating on improved scientific tools to better estimate the impacts of climate change; and identifying the information regional policy makers need regarding climate change adaptation and mitigation.

The working group addresses specific inventory and accounting issues, such as how to characterize the carbon content of the electricity mix; how to account for materials use and recycling; how to account for transportation fuels, including alternative fuels, ethanol blends, bunker fuels, and aviation fuels; what inventory and forecasting tools to use; how to account for sequestration of carbon, including biomass; and other special accounting issues that may arise. The working group will also identify the scientific research needed to help address state and regional policy development.

Background

In 1988, the governing bodies of the World Meteorological Organization and the United Nations Environment Programme created the Intergovernmental Panel on Climate Change (IPCC) to marshal and assess scientific information on the subject. In 1990, the United Nations General Assembly established the Intergovernmental Negotiating Committee for a Framework Convention on Climate Change. Its government representatives adopted the United Nations Framework Convention on Climate Change (UNFCCC) in 1992. It went into effect in 1994.

The UNFCCC has been joined by 188 countries, including the United States, and the European Community. This almost worldwide membership makes the Convention one of the most universally supported of all international environmental agreements.

The ultimate objective of the Convention is "to achieve stabilization of atmospheric concentrations of greenhouse gases at levels that would prevent dangerous anthropogenic (human-induced) interference with the climate system. In 2001, the U.N. Intergovernmental Panel on Climate Change (IPCC) reported in its *Third Assessment Report* that "There is new and stronger evidence that most of the global warming observed over the last 50 years is attributed to human activities."

In 1997, the UNFCCC adopted the Kyoto Protocol to meet specific greenhouse gas emission goals. The United States has refused to join the Protocol; and, it has not gone into effect because it has not met the required participation thresholds.

In the meantime, many states and local governments in the United States have completed greenhouse gas inventories and have prepared strategies and measures to reduce greenhouse gas emissions. The states have accepted technical guidance and assistance from the federal government, but they have also acted on their own assessments of the need to address climate change and have adopted their own policies.

Accounting. This working group focuses mainly on the technical issues related to inventories. Greenhouse gas emission inventories that are being developed by the states of Washington, Oregon and California use guidelines prepared by the U.S. Environmental Protection Agency. The guidelines are adapted from the IPCC guidance for conducting national inventories under the UNFCCC. In each state inventory, greenhouse gases include carbon dioxide, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride. Although the first three gases are also emitted from natural sources, the inventories include only emissions due to human activities.

Each state has prepared greenhouse gas inventories and strategies in the past. The experience of those past efforts informed the list of issues that the region may need to resolve. Nonetheless, development of protocols to record emissions and to measure or forecast reductions of greenhouse gas emissions vary by state.

- California has developed a general reporting protocol for a voluntary reporting system. Forty entities have participated, but reporting has not yet occurred.

- Oregon requires new energy facilities to offset part of their carbon dioxide emissions and it has adopted general guidelines for evaluating offset projects. However, so far all new energy facilities have provided funds to an independent organization, The Climate Trust, to obtain offsets rather than provide offset projects themselves. Therefore, the Oregon guidelines are untested.

- Washington is in the process of adopting a carbon dioxide standard for new energy facilities in 2004. It is also in the process of updating its GHG inventory. In 2000 the state established Fuel Mix Disclosure requirements for electric utilities to help assess fuel use at a utility level and the GHG contribution from this sector. The Puget Sound Clean Air Agency, in conjunction with the Tellus Institute, is developing a detailed GHG inventory. It will attempt to incorporate materials use and recycling into the inventory process.

As the states prepare new state strategies and cooperate on regional efforts, there is a need to ensure that the technical basis for policy decisions is consistent among the states or that the states have identified where they depart from consistent practices. This working group provides the forum for the interstate coordination.

We focus primarily on state inventories. The purpose of a state inventory is to provide background for policy-makers. Likewise, estimates of options to reduce greenhouse gas emissions provide guidance about which policies and measures a state might pursue. The estimates of reductions are for programs, not individual projects. Furthermore, states need a methodology that they can update regularly without extensive data gathering. For

all these reasons, the baselines of emissions and forecast of potential offsets should be based on state level data or regional estimates of average values.

On the other hand, detailed analysis is needed to quantify greenhouse gas emission offsets for trading purposes, calculate offsets offered to meet a regulatory requirement, or measure emissions for registry accounting. Therefore, the conventions that may be adequate for broad policy-making are not meant as guidance for calculations in specific circumstances.

Research. Climate change impacts will have important implications for a number of natural and socioeconomic systems in Washington, Oregon, and California. Natural climatic events such as floods, mud slides, coastal erosion, droughts, and forest fires may be exacerbated by climate change and could thereby affect the state economies and quality of life. Potential changes in precipitation timing, intensity, and distribution and changes in temperature could reduce water availability. Such changes would impact the natural environment, power generation, agriculture, forestry, and other sectors. Human health is also likely to be affected by climate variability and changes in climate.

A range of research efforts have begun through California's Public Interest Energy Research's program in collaborations with other states, the U.S. Department of Energy, the University of Washington's Joint Institute for the Study of the Atmosphere and the Ocean, Battelle Pacific Northwest Laboratory, University of California at Berkeley, Stanford University, and other national labs and universities. These efforts include improved climate change monitoring methodologies, analysis and modeling, estimating greenhouse gas emissions, assessing impacts of climate change on water and ecological resources, sequestration of carbon in the western U.S. region's terrestrial ecosystems and geological formations, and the economics of climate change mitigation and adaptation.

Options

The working group will address specific inventory and accounting issues and identify scientific research needs that can help address state and regional policy development. The three states have agreed on the following inventory and accounting topics:

a) Each state will use data from the U.S. Department of Energy's Energy Information Administration (EIA) to calculate emissions from fossil fuels. International residual bunker fuels (fuels used by ships) would not be included in state inventories. International aviation and diesel fuels would be included.
b) Each state will track emissions through different but coordinated techniques. Oregon and Washington plan to compute utility average annual pounds of carbon dioxide per kilowatt-hour based on Washington's generation tracking system for the Northwest. California is developing methods to use its fuel mix labels to track CO_2 emissions.
c) Each state will use the same inventory and forecasting tools, starting with the US Environmental Protection Agency's "State Greenhouse Gas Inventory Tool and Guidance," the Emissions Inventory Improvement Project's "Volume VIII: Estimating Greenhouse Gas Emissions," and the State and

Territorial Air Pollution Program Administrators/Association of Local Air Pollution Control Officials' "Clean Air and Climate Protection Software."

d) Each state will develop methodologies to account for sequestration of carbon in biomass, including baselines, in coordination with the Regional Carbon Sequestration Partnership.
e) Additional work is required to account for emission reductions through materials use and recycling, considering the difference between accounting for in-state consumption and production. This depends on the availability and acceptance of life-cycle analytical tools.
f) Additional work is required to measure and account for transportation fuels, including alternative fuels and ethanol blends. Additional research and/or development of methodology will be explored.
g) Additional work is required to investigate the contribution to global warming from regional emissions of soot and from tropospheric ozone. The potential to mitigate global warming through reductions in the amounts of anthropogenic soot and ozone should also be evaluated. In either case, the states do not propose to add them to their inventories in the short term.

Regarding climate change science, there is an interest in involving research universities and national labs from the three states. State governments have significantly varying resources allocated to scientific research and rely on federally funded efforts to address climate change impacts in the western region. Using revenue from a public goods surcharge on electricity sales, the California Energy Commission's Public Interest Research Program has formed a collaborative with several universities to share research efforts on new inventory tools and emissions measurement methods. The California Energy Commission will continue to identify opportunities to share data and analysis and to seek additional collaborative research efforts with organizations in the three states.

The three states express a common interest to heighten awareness of research needs in the western region, such as:

a) Evaluating hydrological impacts of global climate change and the related influences on the physical and biological environment.
b) Understanding the socio-economic impacts of climate change on infrastructure, transportation, land use planning, and how people interact with the environment.
c) Seeking ways to inform government decision-makers, industry leaders, and scientific researchers about the potential degradation anticipated from climate change and explore adaptation and mitigation measures.

Pros and Cons

The advantage of coordinating our inventories and estimating techniques is that we can have a uniform assessment that is applicable to the West Coast region. We can compare the forecasted effects of different measures or policies in the three states and evaluate

them in a consistent manner. There are no negative impacts of such coordination. The only reservation might be the limits on resources to develop comprehensive practices.

Regional Approach

We have identified some instances in which states have particular needs. The goal of the working group is not absolute conformity; it is consistency where possible and identification of unique approaches where necessary.

Political Considerations

Regional coordination on accounting issues is not an inherently political activity, so the working group does not anticipate controversy. The Regional Carbon Sequestration Partnership is a stakeholder for all three states. California has identified the California Climate Action Registry as a stakeholder for its accounting measures. The Climate Trust and the Governor's Advisory Group on Global Warming are stakeholders in Oregon. In Washington, the Puget Sound Clean Air Agency will also provide stakeholder input on Washington's state inventory.

We propose research subjects that we believe could better inform policy makers of the impacts of climate change. However, we are not research scientists and we do not propose specific research topics or identify who should conduct the research. That is beyond the scope of the regional coordinating group.

Fiscal or Legislative Implications

There are no fiscal or legislative impacts unless there is need to find funds to conduct a tri-state global warming conference.

Possible Recommended Actions

- The working group anticipates that it will adopt standard accounting practices by September 2004.

- The working group recommends organizing a Governors' conference in the spring of 2005 to inform policy-makers and the public of climate change research concerning the West Coast states and how the citizens, institutions, governments, and businesses in three states might be impacted and could respond to global climate change. The conference would also explore recommendations for continued regional cooperation in addressing global warming.